

AMENDMENTS TO THE CLAIMS

Please amend the claims as follows:

1. (withdrawn) A pharmaceutical composition comprising a host-rotaxane and a guest molecule in a pharmaceutically-acceptable carrier, wherein the guest molecule comprises an active agent.
2. (withdrawn) The composition according to claim 1, wherein the host-rotaxane comprises at least one linear component disposed in at least one cyclic component.
3. (withdrawn) The composition according to claim 1, wherein the host-rotaxane comprises at least one blocking group.
4. (withdrawn) The composition according to claim 2, wherein the at least one of the blocking group comprises a linker for associating the guest molecule to the host-rotaxane.
5. (withdrawn) The composition according to claim 4, wherein the linker comprises a cyclic aliphatic ethers, non-cyclic aliphatic ethers, cyclic aromatic compounds, non-cyclic aromatic compounds, anionic species, cationic species, and functionalized constructions thereof.
6. (withdrawn) The composition according to claim 1, wherein the guest molecule comprises proteins, peptides, amino acids, aromatic compounds, inorganic cations, inorganic anions, organic cations, organic anions, sugars, DNA, RNA, nucleotides, phosphates, phospholipids, fatty acids, steroids, isoprene derivatives.
7. (withdrawn) The composition according to claim 2, wherein the host-rotaxane further comprises at least one recognition element.
8. (withdrawn) The composition according to claim 7, wherein the at least one recognition element is attached to at least one cyclic component.
9. (withdrawn) The composition according to claim 3, wherein the at least one recognition element is capable of forming an interaction with the linker, the guest molecule or a combination thereof.

10. (withdrawn) The composition according to claim 9, wherein the interaction comprises hydrogen bonds, electrostatic interactions, dispersion interactions or a combination thereof.
11. (withdrawn) The composition according to claim 7, wherein the at least one recognition element comprises carboxylates, ammonium ions, guanidinium ions, imidazolium ions, phosphates, aromatic rings, aliphatic groups, alcohols, amides, carboxylates, sulfhydryls, or combinations thereof.
12. (withdrawn) The composition according to claim 4, wherein the host-rotaxane comprises at least one polar recognition element on at least one cyclic component.
13. (withdrawn) The composition according to claim 1, wherein the agent is a therapeutic agent.
14. (withdrawn) The composition according to claim 1, wherein the composition further comprises a binding element.
15. (withdrawn) The composition according to claim 14, wherein the binding element comprises a marking element.
16. (withdrawn) The composition according to claim 15, wherein the marking element is a fluorophore.
17. (withdrawn) A composition comprising a host-rotaxane and an agent.
18. (withdrawn) The composition according to claim 17, wherein the agent comprises a vaccine, a drug, a prodrug, or a derivative or an analog thereof.
19. (currently amended) A method of delivering an agent to a subject, comprising administering to the subject a composition comprising a host-rotaxane and an agent a guest molecule, wherein the guest molecule comprises an active agent; wherein the host-rotaxane is not a polymer and comprises (a) at least one linear component having a first and second terminal end; (b) at least one cyclic component; and (c) at least one blocking group; wherein the at least one linear component is disposed in the cyclic component and the at least one blocking group is present at the first, second or both terminal ends of the linear component; and wherein at least one of the blocking groups on the first or second

- terminal end of the linear molecule of the host-rotaxane comprises a guest binding element for associating with the guest molecule to form a host-guest complex where the host-rotaxane is not a polymer.
20. (currently amended) The method according to claim 19, wherein the active agent is administered prior to, concurrently, or subsequently to the administration of the host-rotaxane and the active agent comprises a vaccine, a drug, a prodrug, or a derivative or an analog thereof.
21. (currently amended) The method according to claim 19, wherein the host-rotaxane further comprises a target-binding moiety linked to the host-rotaxane by a cleavable linker agent comprises a vaccine, a drug, a prodrug, or a derivative or an analog thereof.
22. (currently amended) The method according to claim 19, wherein the active agent is administered to forms a conjugate with the host-rotaxane effective to deliver active agent into the cytoplasm of one or more cells of target cancers, tumors, malignancies, cellular proliferation, or a combination thereof.
23. (currently amended) The method according to claim 19, wherein the composition further comprises a pharmaceutically acceptable carrier and is administered orally, parenterally, intrasystemically, intraperitoneally, topically or combinations thereof.
24. (currently amended) The method according to claim 19, wherein the blocking groups are of sufficient size to prevent the linear component of the host-rotaxane from de-threading from the cyclic component~~composition comprises a pharmaceutically acceptable carrier.~~
25. (currently amended) The method according to claim 24, wherein the cyclic component of the host-rotaxane further comprises at least one covalently attached recognition element~~carrier comprises a solid, semisolid, liquid filler, diluent, or encapsulating material.~~
26. (currently amended) The method according to claim 25, wherein the attached recognition element is present in a convergent arrangement that points towards the guest binding element of the host-rotaxane~~19, further comprising a subsequent administration of an agent to the individual.~~

27. (currently amended) The method according to claim 20, wherein the host-rotaxane forms a conjugate with the active agent effective to transport the active agent through a biological membrane at a rate higher relative to the rate or amount at which the biologically active agent can be transported through the biological membrane in unconjugated form ~~further comprising a subsequent administration to the individual of a guest molecule bound with an agent.~~
28. (withdrawn) A method of treating cancerous cells in an individual, comprising administering to the individual a composition comprising a host-rotaxane, a guest molecule and an agent bound to the host-rotaxane, wherein the composition delivers the agent to the cancerous cells.
29. (withdrawn) The method according to claim 28, wherein the cancerous cells are a tumor.
30. (withdrawn) The method according to claim 28, wherein the agent is a drug, a prodrug, or a derivative or an analog thereof.
31. (withdrawn) A method for diagnosing cancerous cells in an individual, comprising administering to the individual a composition comprising a host-rotaxane, a guest molecule and a marking element and diagnosing the cancerous cells in the individual.
32. (withdrawn) The method according to claim 31, wherein the marking element comprises a fluorophore.
33. (withdrawn) The method according to claim 31, wherein the cancerous cells are diagnosed by imaging.
34. (withdrawn) The method according to claim 19, wherein the host-rotaxane is conjugated to a target-binding moiety.
35. (previously presented) The method according to claim 19, wherein the host-rotaxane is further comprises a fluorophore.